

**WinFS**

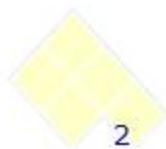
## WinFS Overview: Customer View and Roadmap

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10 February 2004

# Agenda

- What is WinFS *today*?
  - Genesis
  - Vision
  - Longhorn is V1
- How WinFS is Seen
  - Shell
  - Office Partnerships
  - WinFS for ISVs
- Status and Futures
  - 2003 Progress
  - 2004 Goals
  - Futures
- Questions

There are 7 more WinFS ECS talks coming up



# Genesis: End-Users

- Find
  - Better search capabilities will have direct impact on productivity
    - Knowledge workers spend 15-25% of time searching (AIIM)
    - KW's spend 2.5 hours per day searching for information (IDC)
  - “It should be *my* data”
    - The information users create is theirs, not an application's
    - Data should be easily sharable across applications
  - Information should be organized more flexibly
- Relate
  - Users think about information, not file path names
  - End-users being able to relate and act on their data opens new productivity advances
- Act
  - Data overload is a serious and worsening problem
  - Anywhere, anytime, anyplace
  - Offline



# Genesis: Data on the Desktop

- Developers want more from the filesystem
  - Existing file types can participate in a new data-driven user world
  - Current applications just continue to work on Longhorn without changes
- Developers trying to get at common data primitives
  - New things in the OS to integrate with (contacts, calendar, documents, annotations, etc.)
  - New Windows types are extensible
- Developers need a real data platform
  - A data model to build on supported by a real database
  - Windows Explorer extensions to allow end-users access to branded data



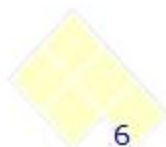
# Genesis: The Database Community

- RDBMS Market

- Relational Model as Codd defined it is mostly complete
- Major enterprise applications write to the lowest common denominator of SQL
  - They all are building common frameworks of schemas, an object model abstraction to the stored data, application logic, etc.
- Database vendors now working to find ways to extend the relational model to get the application vendors
  - OR, XML, filesystem extensions, etc.

- WinFS

- The most complete model yet conceived that comprehensively extends Relational
  - Data as structured, semi-structured, and opaque
  - Data Access as Objects, XML and Relational





# WinFS Vision

*WinFS is the active storage platform for organizing, searching and sharing all data*

- WinFS is about extending and broadening the data platform beyond File and Relational systems, and is the store for all types of data
- WinFS begins to bridge the seams that exist today between standard relational and filesystem data programmability and management
- The future of WinFS and MS SQL continue to remove those seams



# Longhorn is V1

- Focus on the end-user data
- Enable a new Shell experience that capitalizes on the productivity gains
- WinFS as the data pillar of the WinFX platform

Not

- Replacement for a block/streams filesystem
- Replacement for the registry
- Replacement for all database requirements



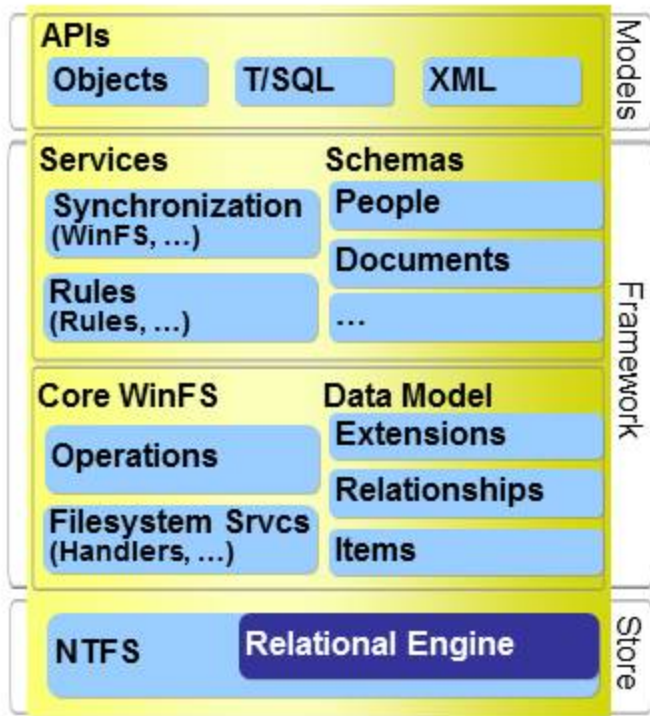
# Longhorn

- Industry platform for the next wave
  - A next-gen desktop OS platform, new applications and services
  - DOS → Win16 → Win32 → LAPI
  - Built in next-gen framework (managed code)
- Provide new innovation opportunities to ISVs
  - Presentation (Avalon, Aero)
  - Communication (Indigo)
  - Storage (WinFS, Aero)
- It's about the industry
  - Innovation
  - Productivity





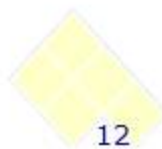
# WinFS



- **Integrated Storage Platform**  
File stream + relational + XML
- **Structured "Item" Store**  
Files/Folders → Items/Relationships
- **New Windows Types**  
"Everyday info" schemas + ISV extensions
- **Multi-master Sync**  
WinFS-to-WinFS + Sync Adapters
- **Active Data**  
Notifications & Rules
- **It's Still a File System**  
FS Semantics, Security, Manageability, Backwards Compatible with Win32 (file backed items)

# A New Windows Explorer

- Shell is making an enormous investment into a new user model with capabilities that are not possible today
- Property driven navigation, relationship discovery, more flexible organization, finding
- Folder model continues to be there for legacy stores



# Shell Screenshot 1



# Contact Library

Jason Howard's PC > Contact Library



View



Print



New Person



New Group



New Company



More

20 contacts  
in your contact library

• Import contacts

• Share contact library

• Sync contacts now

• Import a v-card

• Merge duplicate contacts

• Change sync settings

Type any word here

- Contact Favorites

All contacts

Recent contacts

Personal contacts

Company directory

People near me

More ▾

- Properties

Contact types

Online status

Phone

Address

More ▾

Name ▾

Online status

Job title

Phone

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20 items | 2.1 MB

# Shell Screenshot 3



# Office

- Across Office
  - Thinking hard about the nature of documents
  - Working on design of a "Office Longhorn" release
- Outlook
  - Mail, Contacts, Calendar, Tasks are all end-user data Items
  - Shell integration, new data model, leverage of other types open new doors for Outlook
- Access
  - Ability to integrate with Windows Types
  - High-end knowledge workers can create custom solutions that benefit from Shell integration, synchronization, rules, etc.
- Sharepoint
  - Data managed by Sites and by local system a seamless experience for end-users
  - Not until Longhorn Server

# Status: Shell

- Still innovating
  - Shell design still evolving
- Deeply married
  - Collaborative, productive
  - Could be better organized
  - Solid overall communication
- Key contributors
  - ChrisG, WSmith, NatBa, GSierra
  - Lots of people.. Code is being written!
- Go install a Lab06 build
- Open issues
  - Tracked by Shell in Windows UX Worklist PS database (since M4): 84 resolved, 53 open
  - Major:
    - Conceptual model (e.g. sharing)
    - Performance
    - "App views"
    - Promotion/demotion
    - Schedule (e.g. Beta 1 goals/scenarios)
- Significant events
  - Complete: Shell now uses WinFS API for core database interfaces

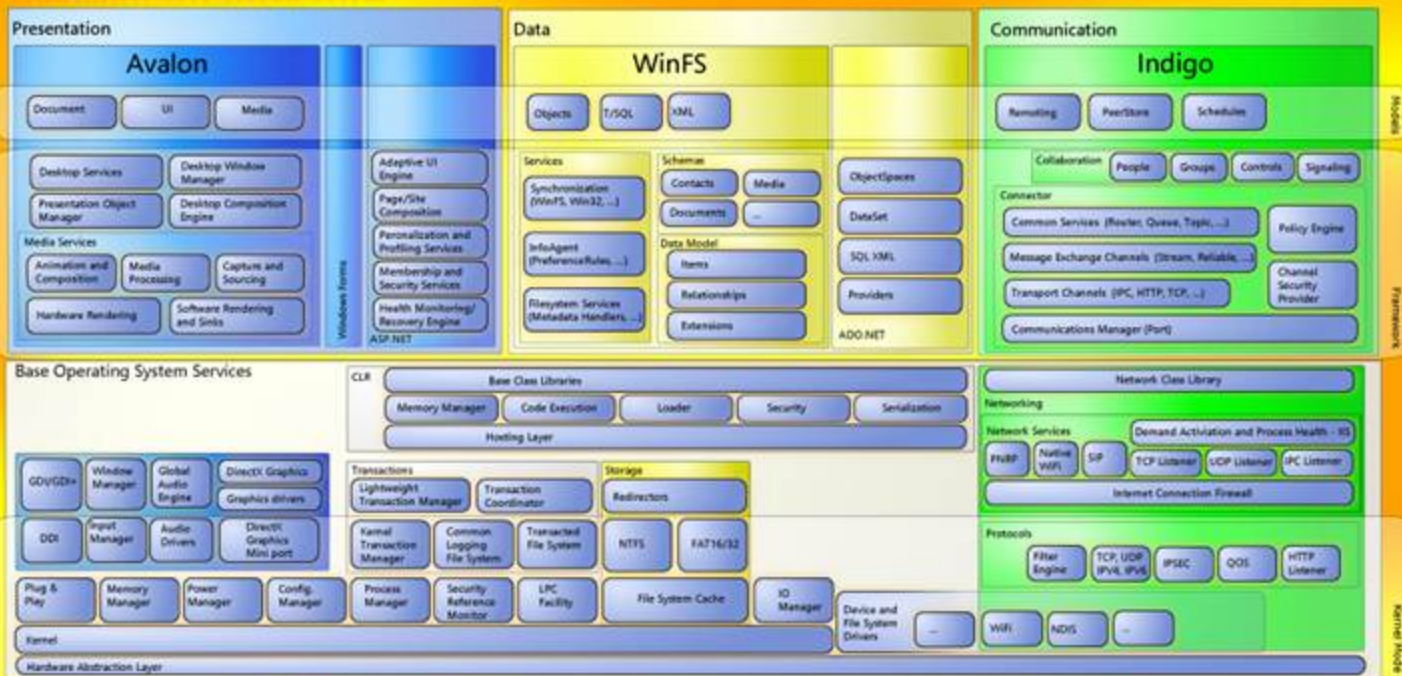
# Status: Outlook

- Outlook is highly engaged
  - WillK, MarcO, AaronH, RicG, DanielKo, AlonB, and more
- Design Issues
  - In PS, tracked 44 tickets, 18 currently open, most in working groups now
  - Couple DCR's in WinFS eng plan now
  - Retired many big picture issues specific to WinFS
  - Remaining list affected by Windows Explorer design work
- Outlook is writing code against current WinFS builds.
  - mdbvu read-only on mail messages is working on dev workstations in building 18
  - Considering changing POR eng plan to work more breadth first
- Drilling
  - User security (viruses attacking contact lists)
  - Application Interoperability
    - What's in Outlook views?
    - Outlook data in other views
  - User data boundaries
  - Schema versioning
  - Remote access and synchronization
    - Identify key scenarios
  - Programmability Story
    - Legacy and the new WinFS model
    - platform API spec
  - Real application performance



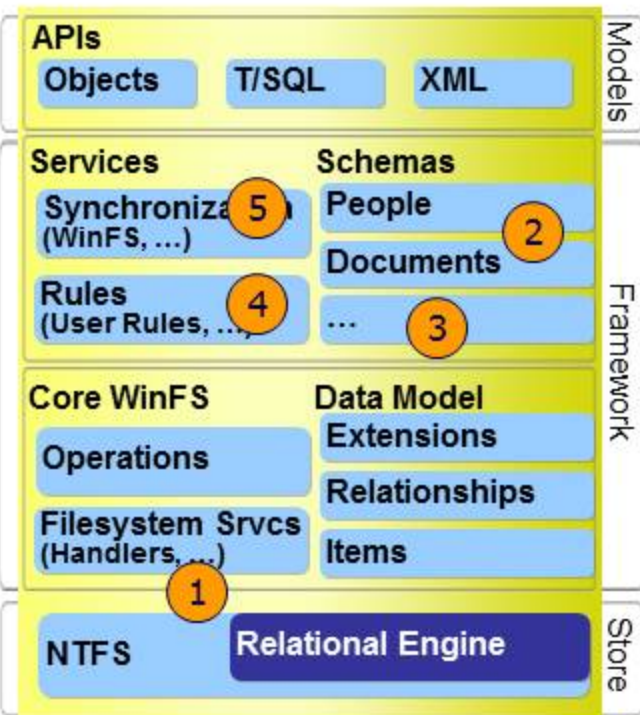
# WinFS for ISVs: Data Pillar of WinFX

## Longhorn Architecture





# Developer Surface Area



- 1 Build Metadata Handlers for existing files
- 2 Write to and Extend Windows types  
- Includes application logic
- 3 Build your own Types  
- Data types  
- Application logic and methods
- 4 Build on Rules  
- Data events, conditions, actions
- 5 Leverage Synchronization  
- Synchronization adaptors
- 6 Integration with Longhorn Shell



# WinFS Status

- 2003 Progress
  - B (UDT) check-in did happen in December
    - This is the “.8” implementation we worked on all last year
    - Shell is now on WinFS APIs in Lab06
    - Outlook is moving ahead, has some code working
  - 2003 Goal to reach closure on major decisions
    - Goal met modulo a couple new things that popped-up
- 2004 Goals
  - Longhorn Milestone 7.2 (completes March)
    - Work on performance
  - Longhorn Milestone 8 (completes end of Summer)
    - Complete platform features for Beta1
    - Work on basics
    - Meet Shell requirements



# Many Decisions

- Many closed over last year, examples:
  - Custom Properties (PS#16521)
  - WinFS on Windows Server 2003 (PS#16559)
  - Proxy Items (PS#16532)
  - State Separation Support (PS#16533)
  - XML Support (PS#16548)
  - CSC/WSS synchronization alignment (PS#20289)
  - SOAP (PS#17815)
  - Distributed Query (PS#16517)
  - Application Logic (PS#16535)
  - Security Model (PS#16526)
  - Encryption Support (PS#16527)
  - DRM Support (PS#16537)
  - Schema Versioning (PS#16536)
- Couple Significant Ongoing
  - MBF/ObjectSpaces/WinFS Alignment (PS#16522)
  - Design for WinFS/SQL Alignment (PS#16552)



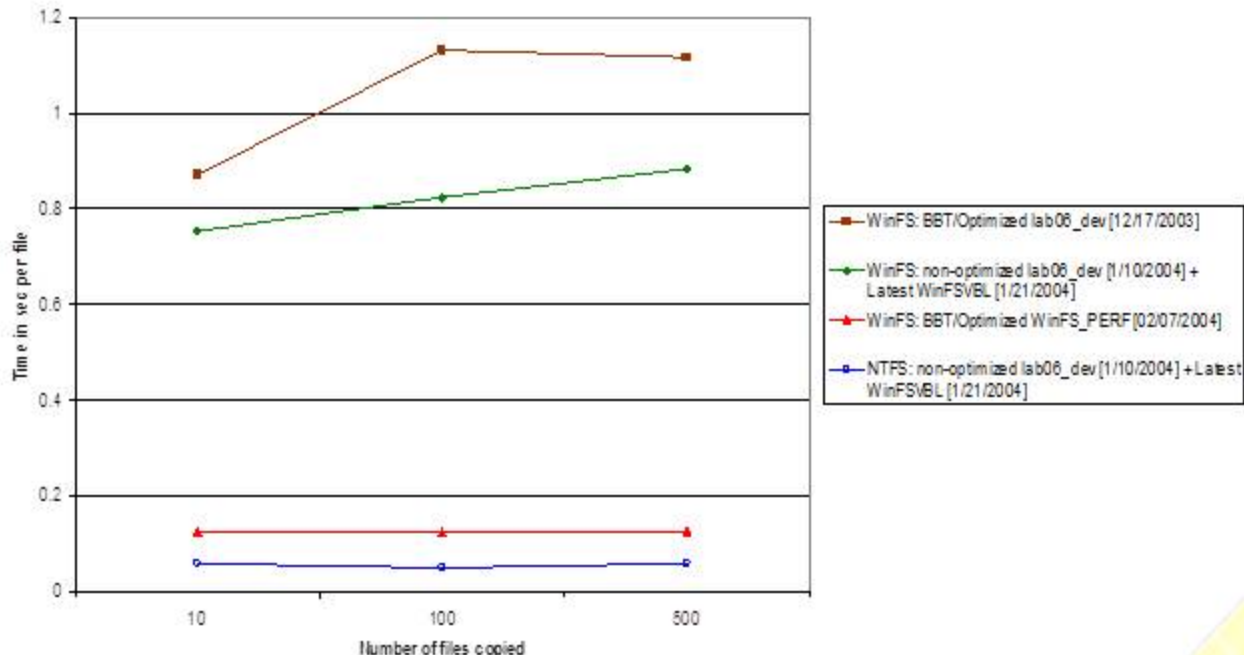
# Performance

- Significant performance issues with PDC WinFS architecture
  - PDC
- Major completion issues with the system just
  - Lots
- January 2005 performance issues
  - Code
  - "Early" performance improvements
  - Resulted in confidence that performance will be there



# Performance Progress

Copy Photos using Shell Copy  
(10/100/500 files, 100 KB each file)



# The Future: A Complete Data Platform

- Longhorn Desktop
  - WinFS in Longhorn will capture Everyday Information for Users
- Windows Server
  - Support Windows client scenarios as the new fileserver
  - Improved file system for internal Windows components use
  - Enable Longhorn applications to run locally for desktop use
  - Non-goal of replacing traditional DB servers
- MS SQL Yukon+1
  - Is the complete data platform (all database features)
  - Can create Tables and Items in any database
  - Significant step toward bridging WinFS and relational data together

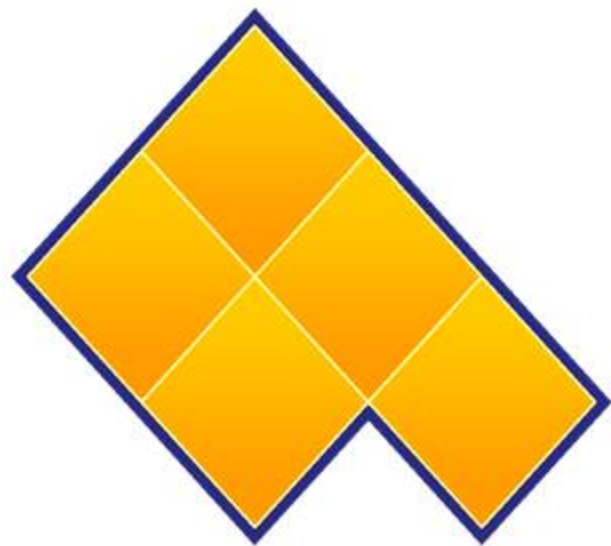




# Making It Happen

- Do something for the Longhorn Wave
  - How is your product going to be better with Longhorn, Office12, Longhorn Live, Longhorn Server?
- Don't suffocate us
  - We can die under the weight of too many requirements
  - That said, it's a platform - give us some time, then build on what it is, not what you wish it was
- Leave design-by-rumors to the big, dumb corporations
  - Come to the source, come talk to me





WinFS

*Thank you!*

# Questions?

## Upcoming WinFS ECS Talks

Programming and Data Model

API

Architecture and Implementation

Schema

Rules Engine

File System Integration

Sync

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Sanjay Anand

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